

REMARKS

This Amendment is submitted in response to the Official Letter dated October 19, 2005. Claims 1, 5, 15 and 18 have been amended. Claims 4, 16 and 17 have been cancelled. The application now includes claims 1 through 3, 5 through 15 and 18 through 25, with claims 1, 15 and 18 being independent claims. Favorable reconsideration of the application, as amended, is respectfully requested.

In the Official Letter, the Examiner objected to the drawings and requested that corrected drawing sheets be submitted. Accordingly, enclosed is a set of seven (7) replacement drawing sheets for inclusion with the application.

The Examiner also objected to an informality in paragraph no. [0011] in the specification. Accordingly, applicant has amended paragraph no. [0011] to correct the informality and respectfully requests that the Examiner withdraw her objection.

In the Official Letter, the Examiner also rejected claims 1 through 6 under 35U.S.C. §102(b) as being anticipated by US Patent No. 4,361,026 to Muller. The Examiner stated that the Muller reference discloses a method and apparatus for sensing fluids using acoustic waves that includes a substrate formed from a piezoelectric crystal and having a sensing surface and a reference surface. The Examiner also stated that the Muller reference disclosed a pair of electrodes deposited upon the substrate reference surface that are separated by a gap and operative to generate a lateral electric field between them with the lateral electric field inducing a transverse shear mode acoustic within the substrate.

Applicant has amended independent claim 1 to recite a substrate formed from a piezoelectric crystal with a crystallographic orientation and a pair of electrodes deposited upon the substrate reference surface. Applicant also has amended claim 1 to recite that the electrodes are oriented upon the reference surface relative to the crystallographic orientation of the substrate such that upon the electrodes generating a lateral electric field therebetween, the lateral electric field induces only a transverse shear mode acoustic wave within the substrate.

Upon a review of the Muller reference, applicant notes that the reference states, in column 3, lines 20 through 24 that:

Fig. 1 illustrates an apparatus for sensing the presence of a specific fluid using *surface acoustic waves*. The waves are propagated

under a sensing member that changes the velocity and/or the attenuation of the waves when in the presence of the fluid. (Emphasis added.)

Additionally, the Muller reference also states, in column 3, lines 31 through 34 that:

The apparatus further includes a medium 14, Fig. 1 on which surface acoustic waves can be propagated. In Fig. 1 the medium comprises a substrate¹⁶ that is fabricated from a semiconductor material such as silicon.

The Muller reference further states, in column 3, lines 52 through 55 that:

The surface acoustic waves propagate *on the surface of the medium 14* and travel under and interact with a fluid sensing member 24 described in detail below. (Emphasis added.)

Based upon the above, applicant believes that the Muller reference teaches a device that generates surface acoustic waves that travel across a surface of a substrate, not transverse shear mode acoustic wave that travel within the substrate, as recited in amended independent claim 1. Nothing in the Muller reference shows or suggests generation of transverse shear mode acoustic waves that travel within the substrate. Indeed, by teaching surface acoustic waves, the Muller reference actually teaches away from the transverse shear mode acoustic waves recited in claim 1. Additionally, the Muller reference discloses a substrate formed from a semi-conductor material, such as silicon, not a substrate formed from a piezoelectric crystal with a crystallographic orientation as recited in amended independent claim 1. Accordingly, applicant believes that amended independent claim 1 is patentable over the art of record and respectfully requests that the Examiner withdraw her rejection of the claim.

Applicant has cancelled claim 4; however, regarding claims 2, 3, 5 and 6, all of the claims are dependent upon amended independent claim 1 and thereby include all of the limitations recited therein. Accordingly, for the reasons given above, applicant also believes that claims 2, 3, 5 and 6 also are patentable over the art of record and respectfully requests that the Examiner withdraw her rejection of the claims.

In the Official Letter, the Examiner further rejected claims 7 through 16 and 22 through 25 under 35 U.S.C. §103(a) as being unpatentable over the Muller reference. However, claims 7 through 13 are dependent upon amended independent claim 1 and thereby include all of the limitations recited therein. Accordingly, for the reasons given above, applicant also believes that claims 7 through 13 also are patentable over the art of record and respectfully requests that the Examiner withdraw her rejection of the claims.

Regarding claim 14, the Examiner stated that the Muller reference discloses a sensor that has a sensing member that changes an operative characteristic of the sensor. However, as stated in column 3, lines 63 through 66:

The sensing member 24, Fig. 1 is a film or layer of material on the propagating medium 14 that is placed in the path of the surface acoustic waves and continuously interacts with them.

Thus, the Muller reference teaches that a fluid sensing member 24 is placed upon a surface of the propagating medium 14, or substrate 16. In contrast, claim 14 clearly recites that the sensing surface is bare. Thus, the Muller reference actually teaches away from the structure recited in claim 14. Additionally, claim 14 is dependent upon amended independent claim 1 and thereby includes all of the limitations recited therein. Accordingly, for the reasons given above, applicant believes that claim 14 is patentable over the art of record and respectfully requests that the Examiner withdraw her rejection of the claim.

In the Official Letter, at the top of page 6, the Examiner stated that claims 15 through 16 and 23 through 25 concern the method of making the device. The Examiner then stated that because the making of the device is inherent in the device itself, claims 15 through 16 and 23 through 25 were rejected under the same grounds as disclosed earlier in the Official Letter.

On November 22, 2005, the undersigned attorney contacted the Examiner by telephone and explained that the Office Action did not give specific reasons for rejection of claims 15, 16 and 23 through 25. The Examiner replied that independent claim 15 had been amended in the response dated July 26, 2005, to recite the same limitations as independent claim 1 and that each of claims 15, 16 and 23-25

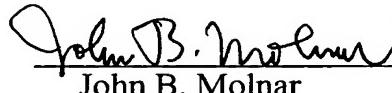
correspond to one of claims 1 through 14. The Examiner further stated that it should be clear as to the reasons for rejection of each of the claims. However, the undersigned attorney notes that the Examiner's answer places a burden upon the applicant to identify the grounds for rejection for each of the claims, because the applicant must decide whether 35 U.S.C. §102(b) or 35 U.S.C. §103(a) should apply since both sections of 35 U.S.C. were used to reject claims 1 through 14. Accordingly, applicant hereby objects to the lack of specifically stated reasons in the Official Letter for the rejection of claims 15, 16 and 23 through 25. Nevertheless, applicant has amended independent claim 15 in the same manner that he amended independent claim 1. Applicant also has canceled claim 16. Remaining claims 23 through 25 are dependent upon amended independent claim 15 and thereby include all of the limitations recited therein. Accordingly, for the reasons given above, applicant also believes that claims 15 and 23 through 25 also are patentable over the art of record and respectfully requests that the Examiner withdraw her rejection of the claims.

At the top of page 6 of the Official Letter, the Examiner also stated that, regarding claims 18 through 22, the same grounds of rejection applied to claims 1 through 14 apply as explained earlier in the letter. During the November 22, 2005, teleconference, the undersigned attorney explained that independent claim 18 recited limitations from claims 1 through 3. Because claims 1 and 2 that were rejected under 35 U.S.C. §102(b) and claim 13 was rejected under 35 U.S.C. §102(b), the grounds for the rejection of claim 18 were unclear. Additionally, the undersigned attorney also explained that independent claim 18 included limitations for a variable voltage supply and a device that is operative to detect the resonance frequency of the sensor. It was then pointed out to the Examiner that these limitations were not included in any of claims 1 through 14. The undersigned attorney also explained to the Examiner that claims 20 through 22 recited limitations that were not included in any of claims 1-14. The undersigned attorney then informed the Examiner that, lacking clear reasons for the rejection of claims 18 and 20 through 22, it would be extremely difficult to respond to the Official Letter and requested that the Examiner withdraw the Official Letter and issue a new one with reasons for rejection of claims 18 through 22 stated. The Examiner replied that she could not withdraw the Official Letter, but that the next Official Letter would not be a Final Office Action. However, applicant hereby objects

to the lack of specifically stated reasons in the Official Letter for the rejection of claims 18 and 20 through 22. Nevertheless, applicant has amended independent claim 18 in the same manner that he amended independent claim 1. Claims 20 through 22 are dependent upon amended independent claim 18 and thereby include all of the limitations recited therein. Accordingly, for the reasons given above, applicant also believes that claims 18 and 20 through 22 also are patentable over the art of record and respectfully requests that the Examiner withdraw her rejection of the claims.

In view of the amendments and above remarks, it is believed that the application is in condition for allowance.

Respectfully submitted,


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Enclosure – Set of Replacement Drawing Sheets

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